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by *rocking*, and I have little doubt but that this was one of the component parts, at all events, of the treatment resorted to by the whisperers. As to *biting the ear*, I have seen this tried, and that successfully. If you succeed in getting the ear of the most vicious horse between your teeth, and bite it with all your force, you will find the rage of the animal suddenly subside, his spirit will appear to have forsaken him, and a word or a look from you will cause him to start and tremble with excess of terror. Once the ferocity of an animal is removed, it is an easy matter to conciliate his affections. May not these two modes of treatment combined, or one or the other, as the occasion seemed to require, have constituted the secret of the wonder-working whisperers? The suggestion is at least plausible, and the experiment should be fully tried ere it be rejected.

In an article which appeared lately on the subject of animal taming in the *Times* newspaper, mention is made of Mr King, owner of the "learned horse" at present exhibiting in London. This person states that his secret depends upon pressing a certain nerve in the horse's mouth, which he calls the "nerve of susceptibility." May not the act of whispering have likewise depended upon compressing with the teeth some similar nerve in the ear?

H. D. R.

RELICS.

BY J. U. U.

"Raphael was buried in the Pantheon (Sta. Maria della Rotonda), in a chapel which he had himself endowed, and near the place where his betrothed bride had been laid. The immediate neighbourhood was afterwards selected by other painters as their place of rest. Baldassane Peruzzi, Giovanni da Udine, Pierino del Vaga, Taddeo Zuccaro, and others, are buried near. No question had ever existed as to the precise spot where the remains of the master lay; but a few years since the Roman antiquaries began to raise doubts even respecting the church in which Raphael was buried. In the end, permission was obtained to make actual search; and Vasari's account was in this instance verified. The tomb was found as he describes it, behind the altar itself of the chapel above mentioned. Four views of the tomb and its contents were engraved from drawings by Cammucini, and thus preserve the appearance that presented itself. The shroud had been fastened with a number of metal rings and points; some of these were kept by the sculptor Fabrio of Rome, who is also in possession of casts from the skull and right hand. Passavant remarks, judging from the cast, that the skull was of a singularly fine form. The bones of the hand were all perfect, but they crumbled into dust after the mould was taken. The skeleton measured about five feet seven inches. The coffin was extremely narrow, indicating a very slender frame. The precious relics were ultimately restored to the same spot, after being placed in a magnificent sarcophagus, presented by the present Pope."—*Quarterly Review.*

Ay, there are glorious things even in the dust
Which still must ever from the human heart
Win homage next devotion. 'Tis in vain
To ask the wherefore, or demand what are they
Amid the keen realities of life?
Old coin, or broken casque, or fretted stone—
The waste of Time—the rack upon life's shore
Thrown up by the spent waves of centuries—
They have no meaning in the vulgar tongue;
Their very uses know them not—things past
Into the chaos of forgotten forms.
But here the root of this deep error lies.

The world's deep Lethé onward blindly glides,
A perishable Present! glorious only
Because no Future and no Past are seen
To scare or shame its dreamy voyager.
In dull forgetfulness the error lies,
That hath no feeling of the mighty Past
Espoused to sense, and purblind as the mole
To all that meets the intellectual eye:
To such Iona is a heap of stones,
And Marathon a desert. * * *
* * * O, how changed!
The meanest thing on which great Time hath set
His awful stamp (the long-surviving thought
Left by the mind of other days) appears
To knowledge and the gaze of memory,
More instantaneous than those words of power
Which ancient legends say the tomb obeyed—
The broken pillar, and the moss-grown pile,
Dilate into antique magnificence:
At once the stern old rampart crowns its height—
The donjon keep, the tower of ancient pride,
The rock-built fortress of old robber kings,
Start into life, and from their portals pour
Mailed foray forth, or pomp of feudal war.
The temple swells from vacancy, o'erarching
With pillared roof, and dim solemnity,
The worship of old time. The dry bones live
Of ancient ages: monarch, sage, and bard,
Stand in their living lineaments, invested
With power, or wisdom, or the gift of song.

These still are common ruins—the remains
Of those who were the vulgar of their day,
Who battled, built, and traded, and so died,
Leaving no trace but nameless monuments,
The cast attire of ages, which but serve
To show the present how the past went mad,
And, like Cassandra, prophesy in vain.
The earth yet bears more glorious vestiges
Of Time's illustrious few, whose memory
Is greater than the greatest thing that lives—
Haloed by veneration, wonder, love—
Whose very tombs stand in life's calendar
Eras of thought once seen. Is there an eye
Could coldly gaze on aught that bears a trace
Of Avon's matchless master of the breast?
Who could approach old Dryburgh's tombs, and feel not
The illustrious presence of his great compeer,
Whose tomb yet moistens with a nation's woe,
Whose star is young in heaven? Or who can walk
Unmoved the cloisters and religious aisles
Where Milton lies, renowned with "prophets old,"
And honoured Newton, to whom the starred vault
Is an enduring monument, as much
As the Pantheon's dome is Angelo's?

What is the pride of kings, the world's vain splendour,
To such a presence as they witnessed there
Who disinterred the bones of Raphael,
Awful from the repose of centuries?
There stood that day a solemn, anxious crowd
Around that altar which conceals beneath
The mighty master's relics—for there was a doubt
If it were truly there that he was laid.
And there they found all the dull grave could keep
Of that Immortal. With no common awe
They bent o'er his dark cell, as it disclosed
Its treasure to the selfsame holy light
That gladdened oft of old the master's heart,
And waked his heaven-eyed genius; while beneath
The shadowy splendour of that spacious dome
He stood in living sanctity, a pure
And heavenly-minded man—even where they stood
To gaze upon his dust—and all around
He scattered bright and hallowed images
Of perfect beauty—in their brightness there
Still lying as he left them. Shadows fair
Of angel form and feature—ye who gaze
In clouded splendour through those cloisters old,
Looking as things of life—could ye behold
Those slender bones, they were the living hand
Beneath whose touch ye started into being
And grew to light and beauty, covering
Your storied frescoes with the lines of grace,
Harmonious hues and features of the sky.
And yonder is your birthplace, yon light skull—
The slight and delicate shrine of all that mind!
'Tis a strange thought how vast a world revolved
In thy small compass! Senseless as thou art,
Who could behold thee as a mouldering bone,
The mere dust of unsphered humanity?
There, from that lowly cell as rose to light
The canonized remains of one whose mind
Hath been a worship to the eye of ages,
They were not seen thus coldly—time gave back
Its venerable honours registered
Deep in the heart of living Italy—

A crown of many-tinted sanctities.
Thy beauty, goodness, and pure innocence,
Thy faculty of vision, gift divine,
Rushed round thee as a glory—thou wert seen
With all thy laurels round thy honoured tomb.
Thine is no pile of unrecording stone—
Pale marble column or tall pyramid,
That vainly robs oblivion of its prey:
Thy name lives on each lip—thy monuments
Are treasures fondly kept midst precious things,
Sought out in every land which the sun warms
To nobler thoughts—thine are perennial wreaths
Of trophies yet surviving, when the fame
Of fields that rang through Europe, and made pale
The peaceful hamlets of an hundred realms,
Have shrunk within the fretted register,
The silent scroll, named History—still the halls
Of national state or regal pomp are bright
With thy far-sought creations, costliest
Among the treasured trophies of the mind;
And as thy time on earth was consecrated
To sacred labours meet for holy walls—
So would I deem thy gifted spirit still,
Invested in its light of heavenly thoughts,
The minister of some pure temple, where
No human errors mingle with the work.

ON THE POWER OF FLUIDS.

That weight is a property of liquids, has been acknowledged by the earliest observers; but the amount of that weight, its mode of acting, and application to practice, have been left for recent times to discover. A pint of water weighs somewhat more than a pound avoirdupois; and one unacquainted with the facts in hydrostatics might deem it of little consequence what shape the vessel that contained it might be, or what the disposition and length of the column of water—for, after all, what is it but a pound of water? No idea can be more erroneous. Under most circumstances, it is not so much the quantity of the fluid as the manner in which its particles are disposed, that determines its weight; and what may appear still more extraordinary, a small quantity of fluid may be made to balance, that is, to be of the same apparent weight as, a very large quantity. This may be proved by taking a pair of scales, putting a tumbler full of water into one dish, and balancing it by weights in the other, then inverting a smaller glass and immersing it in the tumbler, having the glass perfectly supported in the hand to prevent it touching the sides or bottom; a portion of the water will now flow over the sides of the tumbler—say one-half—yet the scales are still balanced; one-half of the water is of the same weight apparently as the whole. A piece of wood may be used instead of the glass with the same result, and it may be of a size nearly to fill the cavity of the tumbler; yet if the remaining water, which may amount to no more than a couple of spoonfuls, rise to the same level as it did when full, it will exactly balance the weights. This cannot be accounted for by saying that the wood or the glass was equal to the water displaced, for if we use lead, which is much heavier, or cork, and even card, which are much lighter, we shall meet with no difference. This property belongs to the water; and as the only constant fact was the same height of the fluid, to it must the explanation be referred; and we thus arrive at a first principle, a law in hydrostatics—that the pressure, or weight considered as a power, of any fluid, is not in proportion to its quantity, but to its depth.

Aware of this principle, if we wish to use water as a power, we can economize it wonderfully, exerting a great pressure with a small quantity. If we take a small wooden box, water-tight, bore a hole in it, and fill it with water, adapt a long narrow tube to the hole, and fill it up with water, the box will now be burst, and that by the very small quantity contained in the tube. This tube may be a yard long, and very narrow in diameter, not holding more than two ounces of fluid, yet the pressure, being always in proportion to its depth, is the same as if it had been as broad as the box. This pressure amounts to nearly one pound on the square inch for every two feet of water. In the deepest parts of the ocean the pressure must be exceedingly great, so much so that it is probable they are uninhabitable, the pressure being too great for the existence of fishes. This pressure, together with the total absence of light at great depths, renders the existence of vegetable life also a doubtful matter. There is a certain depth beyond which divers cannot go, owing to the pressure of water on the surface of their chests being greater than the resistance of air inside, respiration being thereby impeded.

A pipe a yard long, and acting on a yard square of fluid, will give a pressure equal to the weight of fifteen cwt. if we use water. Should we use quicksilver, the power of a ton weight may be obtained within the space of a square foot in breadth, by a tube somewhat less than three feet long, and not larger than a common goose quill—the pressure per square inch in these cases depending on the height of the column of fluid.

We can now understand what extensive and sometimes irremediable injury may arise from the collection of a small but lofty column of water, opening into a wide but confined space below. This sometimes occurs when water gets into a narrow chink between buildings, and, finding its way down, opens finally into some cavity under the floor. The pressure exerted here is immense, and there are few bodies able to resist it. It is owing to this that the pipes for conveying water are burst, on account of the pressure exerted on the insides of the pipes; and this occurs the more frequently, the higher the source from which they are filled. In practice, every vessel containing liquid should increase in strength in proportion to its depth. We have no doubt that a process similar to this takes place on the large scale in nature, which is capable of uprooting trees, rending rocks, producing earthquakes; for if we suppose that some collections of water on the surface of a hill have found their way down through crevices into a cavity in the body of the mountain which has no external opening, as long as this cavity remains unfilled no evil arises, but when it and the crevices also are completely filled, the pressure exercised here is so immense, that even the sides of the hill cannot withstand it. Perhaps this occurrence has not been sufficiently noticed in explaining natural phenomena. It is usual to consider earthquakes and volcanoes as solely the result of chemical action, excluding entirely physical agency.

The pressure of water may be rendered visible by blowing through a tube under water into a tall glass jar. The bubble of air, small at the bottom, as it rises, gradually enlarges from the diminution of the pressure.

The hydrostatic bellows, formed upon this principle, consists of nothing more than a water-tight bellows, with a long pipe fixed into the valve aperture. If this pipe be three feet long, and hold a quarter of a pint of fluid, it will exert a pressure sufficient to raise three cwt. laid upon a bellows, the area of the upper side of which is equal to about a square foot and a half. Many are the uses to which this principle might be applied in the several arts.

Bramah's Press is almost the only machine which has been extensively used. By its means solid bars of iron can be cut through with ease. Hay and cotton have been compressed by its means into a very small compass. In the East Indies, where water-power is used, bales of cotton are compressed into one-half the size of those from the West Indies. By its means power may be multiplied, or rather concentrated, a thousand-fold. As commonly made, a man working it may, by using the same force that would raise half a cwt., apply a force amounting to twenty tons to the work in hand; and by varying the proportions of the machine, pressure might be brought to bear upon any body which would be perfectly irresistible.

There is, however, in reality, be it distinctly understood, no power absolutely gained; but the man's force is *concentrated*, as for instance in compressing the bale of cotton, to an extent which, if the ordinary mechanical powers of the lever or screw were employed, would require the aid of ponderous machinery.

Mr Bramah was therefore greatly mistaken when he published it as the discovery of a new mechanical power: but he invented a beautiful and most effective means of simply accumulating a prodigious force by the very simple means of the hydrostatic pressure of fluids.

Hydraulic or Bramah presses are applied in New York and other American ports for the purpose of raising large vessels on strong wooden platforms out of the water, for effecting repairs, &c. They are also employed in removing houses—some of them brick, and three stories high—from one part of a street to another. In this case strong wooden beams, like the ways used in ship-launching, are placed under the house, and in the direction of the intended site, and hydraulic presses are then employed for pushing the house along, with prodigious force, and so gradually and gently as